Claims

1. A prestressed composite girder, comprising:

shear reinforcing bars and main reinforcing bars arranged across the prestressed composite girder;

sheaths adapted to contain steel wires arranged across the prestressed composite girder;

sole plates placed at ends of the prestressed composite girder and provided with shear connecting members; and

steel plates placed in upper and lower flanges of the prestressed composite girder and provided with shear connecting members.

2. The prestressed composite girder as set forth in claim 1, wherein the steel plates placed in the upper and lower flanges are embedded across an entire length of the prestressed composite girder.

3. The prestressed composite girder as set forth in claim 1, wherein, for a simple bridge, the steel plates placed in the upper and lower flanges are embedded across an entire length of the prestressed composite girder except ranges extending from both ends of the prestressed composite girder by about 15% of a span.

4. The prestressed composite girder as set forth in claim 1, wherein, for an outside span of a continuous bridge, the steel plates embedded in the upper and lower flanges of the prestressed composite girder are embedded in a negative moment range extending from one end of the prestressed composite girder by about 10~15% of a span.

5. The prestressed composite girder as set forth in claim 1, wherein, for an outside span of a continuous bridge, the steel plates embedded in the upper and lower flanges of the prestressed composite

girder are embedded in a negative moment range extending from one end of the prestressed composite girder by about 10~15% of a span, and a range extending from a point of a greatest positive moment to right and left thereof by about 20%.

6. The prestressed composite girder as set forth in claim 1, wherein, for an inside span of a continuous bridge, the steel plates embedded in the upper and lower flanges of the prestressed composite girder are embedded in negative moment ranges extending from both ends of the prestressed composite girder by about 10~15% of a span.

7. The prestressed composite girder as set forth in claim 1, wherein, for an inside span of a continuous bridge, the steel plates embedded in the upper and lower flanges of the prestressed composite girder are embedded in negative moment ranges extending from both ends of the prestressed composite girder by about 10~15% of a span, and a range extending from a point of a greatest positive moment to right and left thereof by about 20%.

8. A method of fabricating a prestressed composite girder, comprising:

arranging shear reinforcing bars and main reinforcing bars across the prestressed composite girder;

arranging sheaths containing steel wires across the prestressed composite girder;

placing sole plates on ends of the prestressed composite girder;

arranging steel plates provided with shear connecting members in upper and lower flanges of the prestressed composite girder;

casting concrete into the prestressed composite girder; and

introducing a compressive force to the prestressed composite girder by tensing the steel wires included in the sheaths after the concrete

is cured.

9. The method as set forth in claim 8, wherein, for an outside span of a continuous bridge:

the sole plates are placed at one end of the prestressed composite girder where a moment is not generated; and

the steel plates arranged in the upper and lower flanges of the prestressed composite girder are embedded in a range of negative moments extending from one end of the prestressed composite girder.

10. The method as set forth in claim 8, wherein, for an inside span of the continuous bridge:

the sole plates are not embedded; and

the steel plates arranged in the upper and lower flanges of the prestressed composite girder are embedded in ranges of negative moments extending from both ends of the prestressed composite girder.

11. A continuous prestressed composite girder structure, comprising:

upper steel plates embedded in upper flanges of prestressed composite girders, provided with shear connecting members, and connected to each other in a butt welding manner;

lower steel plates embedded in lower flanges of the prestressed composite girders, provided with shear connecting members, and connected to each other in a butt welding manner;

an upper connecting plate placed on the upper steel plates and welded to the upper steel plates at four sides thereof in a fillet welding manner;

a lower connecting plate placed under the lower steel plates and welded to the lower steel plates at four sides thereof in a fillet welding manner; and

an epoxy resin adapted to fill a gap between the prestressed composite girders.

12. A continuous prestressed composite girder structure, the continuous prestressed composite girder structure being constructed by connecting preflex composite girders in a welding manner, comprising:

upper and lower flanges of steel forms of the preflex composite girders connected in a butt welding manner;

an upper connecting steel plate placed on the upper flanges of the steel forms and connected to the upper flanges of the steel forms at four sides thereof in a fillet welding manner;

a lower connecting steel plate placed under the lower flanges of the steel forms and connected to the upper flange of the steel forms at four sides thereof in a fillet welding manner; and

a web connecting steel plate placed besides webs of the steel forms of the preflex composite girders and connected to the webs of the steel forms at four sides thereof in a fillet welding manner.

13. A method of connecting prestressed composite girders, when constructing a continuous bridge, comprising:

connecting upper and lower flange steel plates, which are embedded in upper flanges of prestressed composite girders in contact with each other, to each other in a butt welding manner;

placing an upper connecting plate on the butt-welded upper flange steel plates and welding the upper connecting plate to the butt-welded upper flange steel plates at four sides thereof in a fillet welding manner;

placing a lower connecting plate under the butt-welded lower flange steel plates and welding the lower connecting plate to the butt-welded lower flange steel plates at four sides thereof in a fillet welding manner; and

injecting an epoxy resin into a gap between the prestressed composite girders in contact with each other and filling the gap with the

epoxy resin.